No. 693,620. Patented Feb. 18, 1902.

A. F. PRESTON.

PULLING OVER MACHINE.

(Application filed Mar. 5, 1900.)

(No Model.) 5 Sheets—Sheet 1.

FIG. 1.

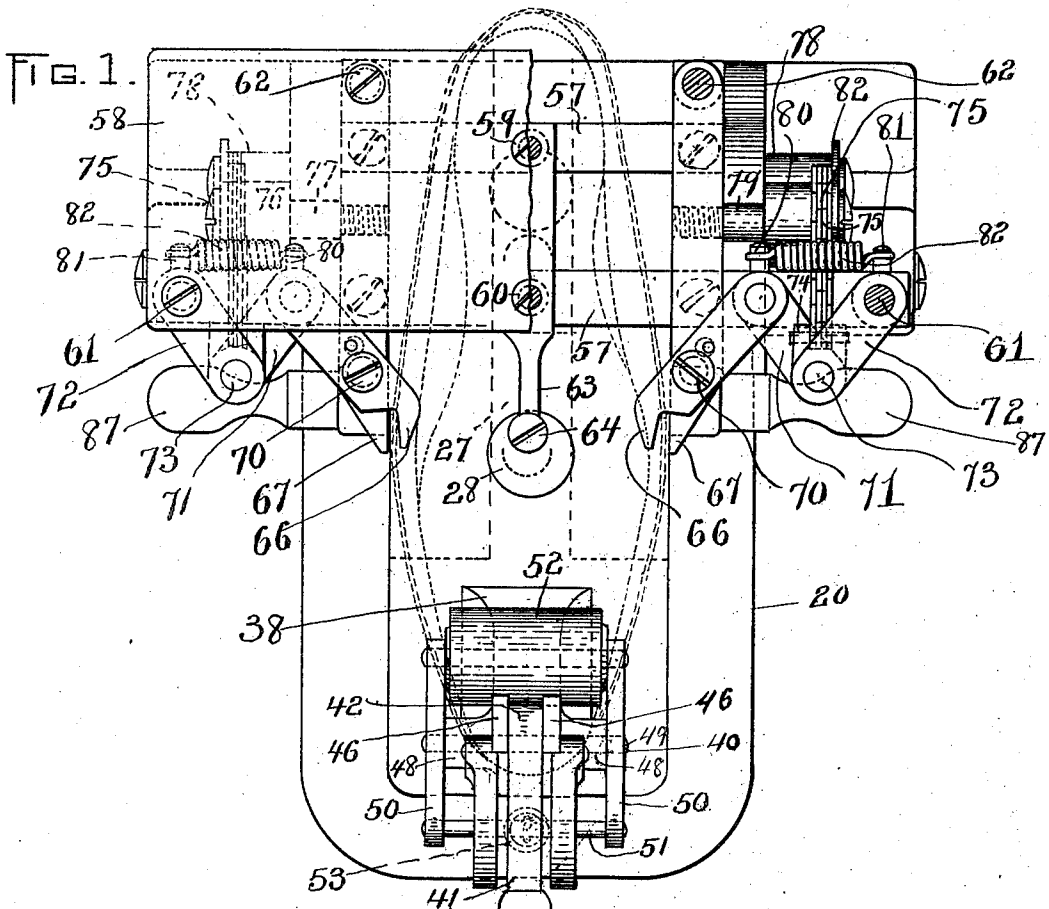
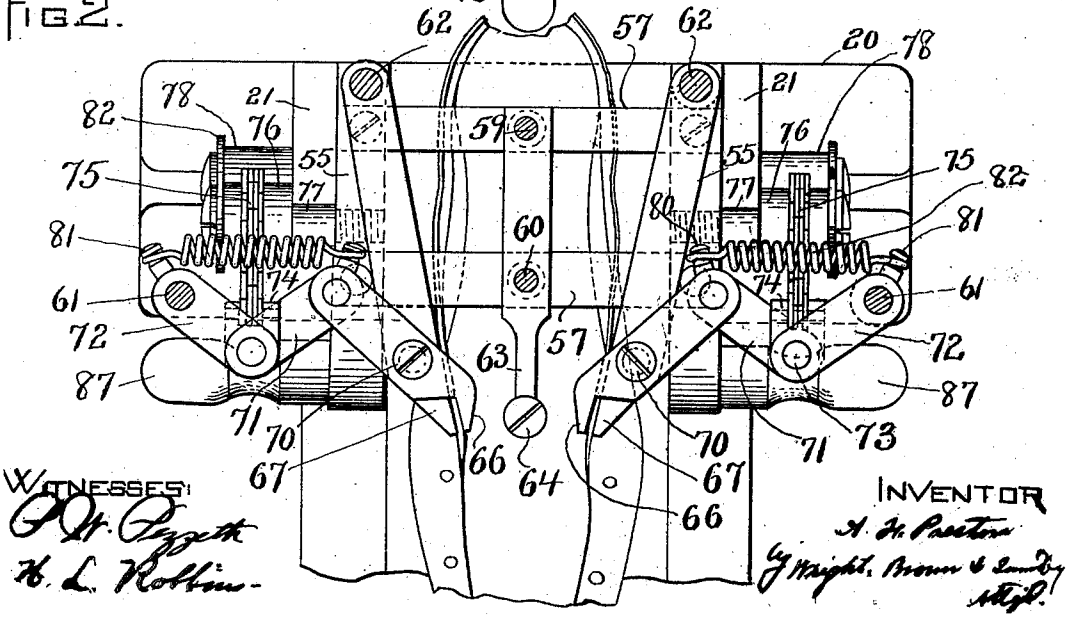


FIG. 2.



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FIG. 3.

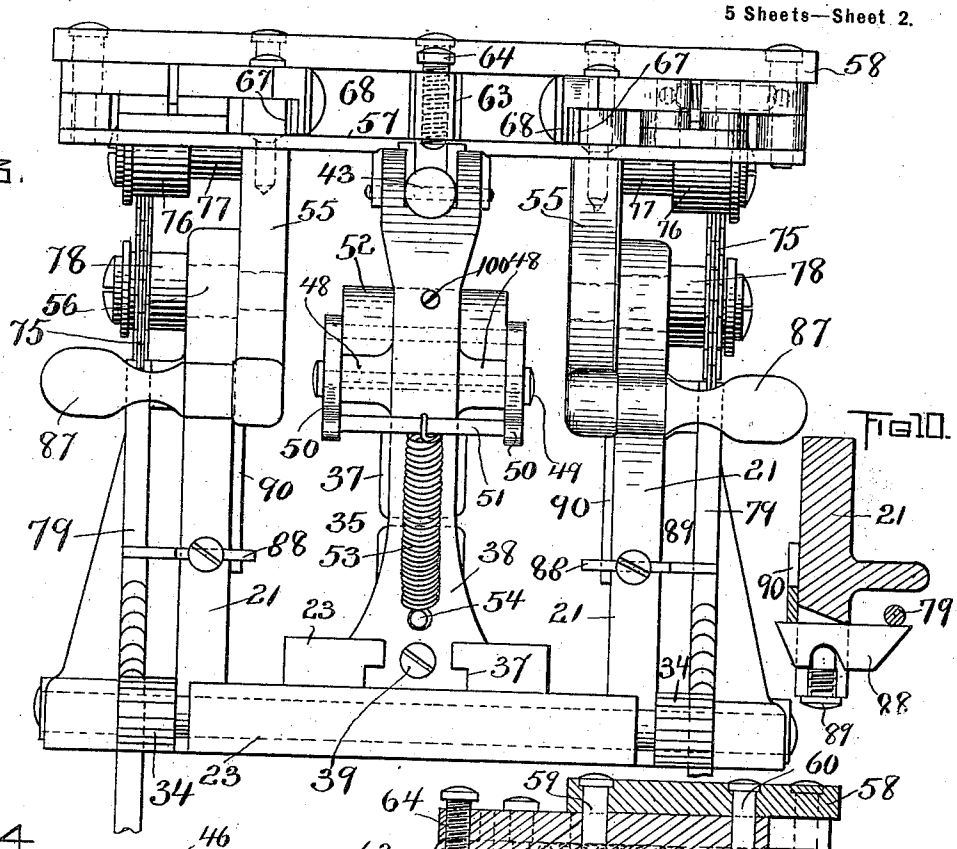
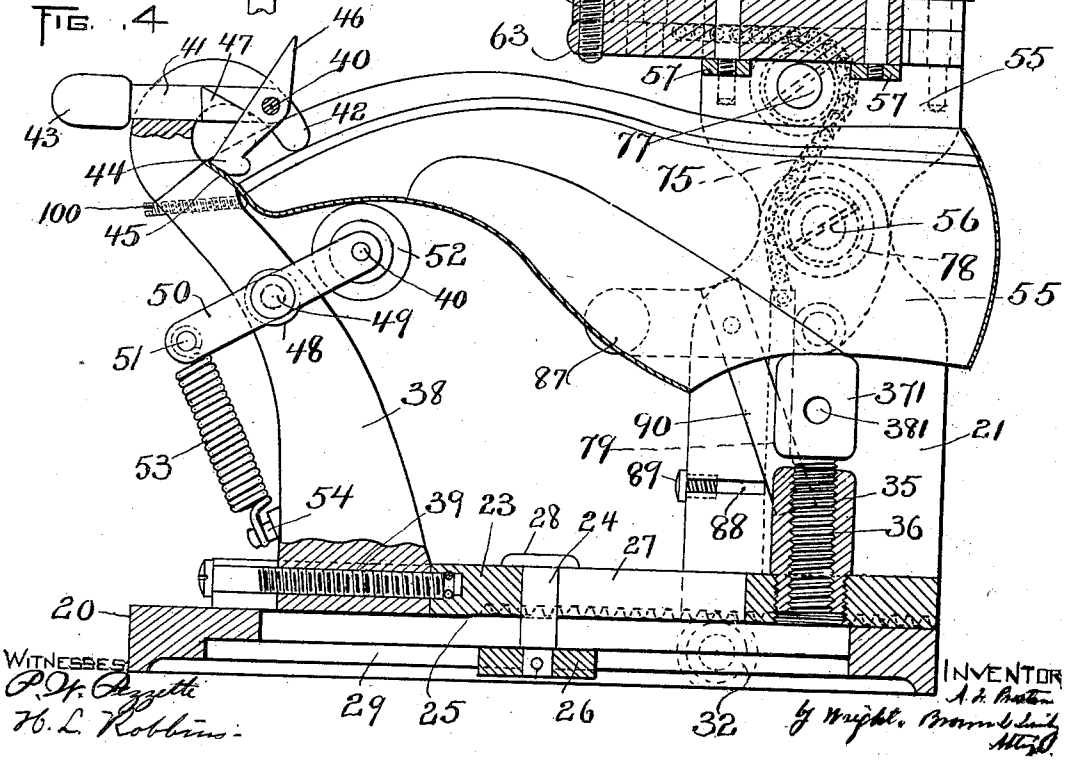


FIG. 10.

FIG. 4.



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(No Model.) 5 Sheets—Sheet 3.

FIG. 5.

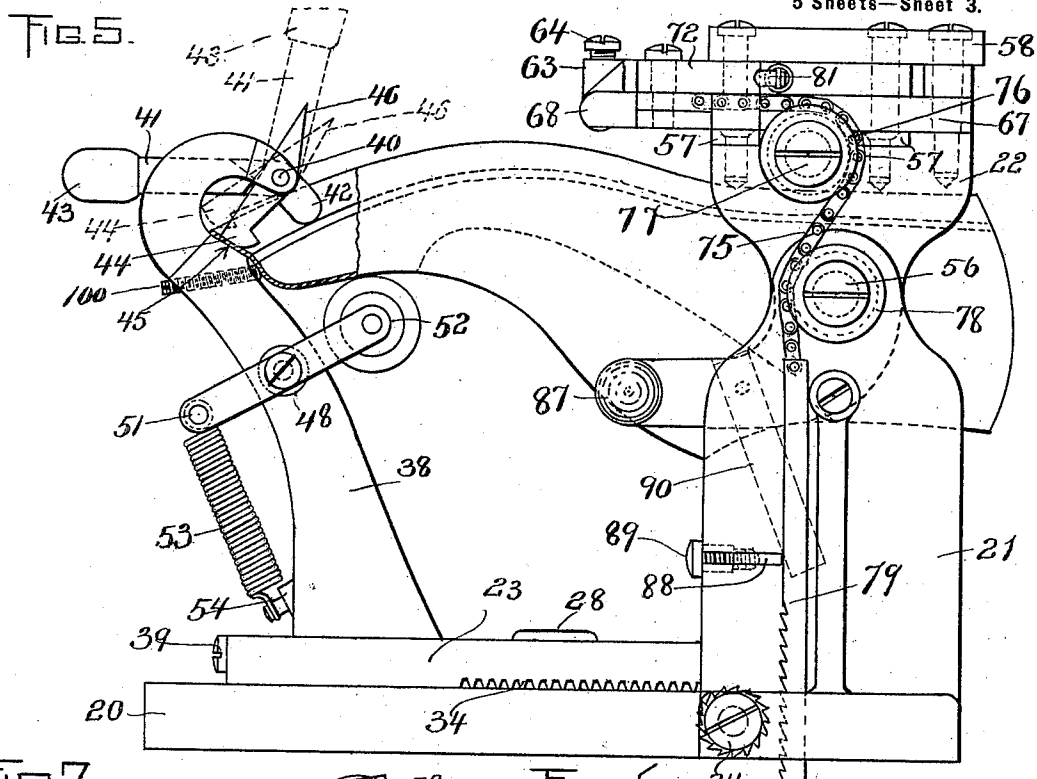


FIG. 7.

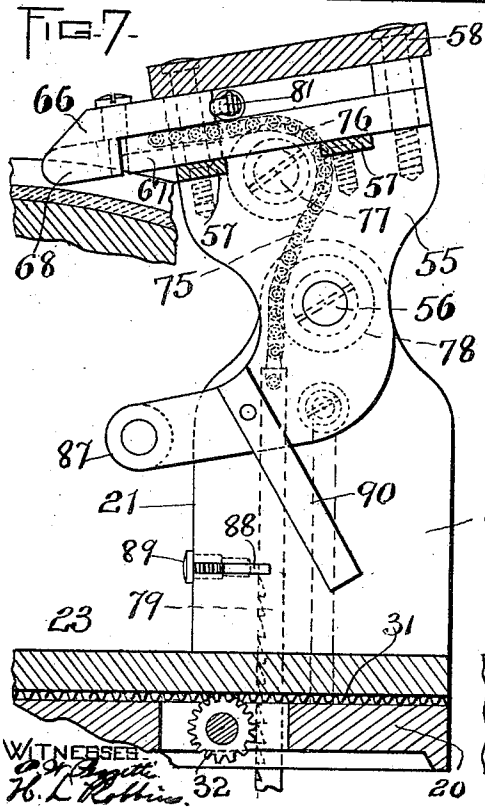
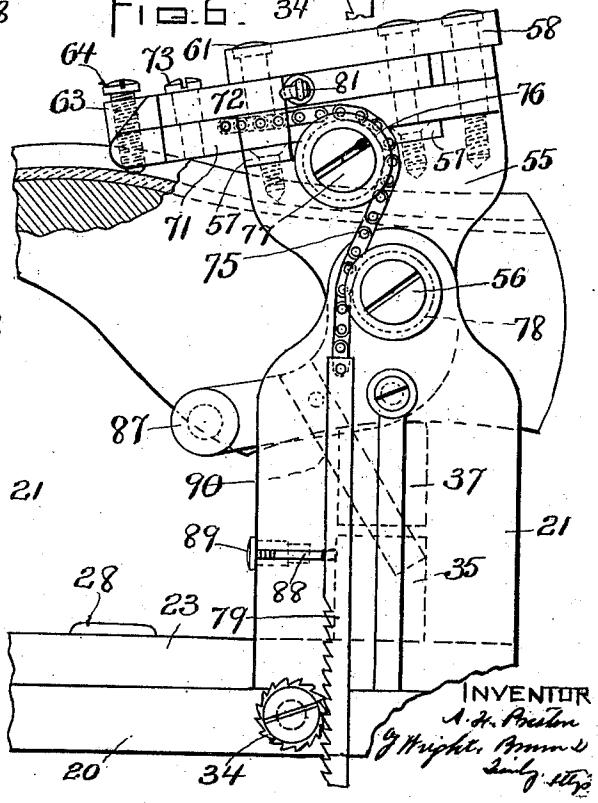


FIG. 6.



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No. 693,620. Patented Feb. 18, 1902.

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PULLING OVER MACHINE.

(Application filed Mar. 5, 1900.)

(No Model.) 5 Sheets—Sheet 4

FIG. 8.

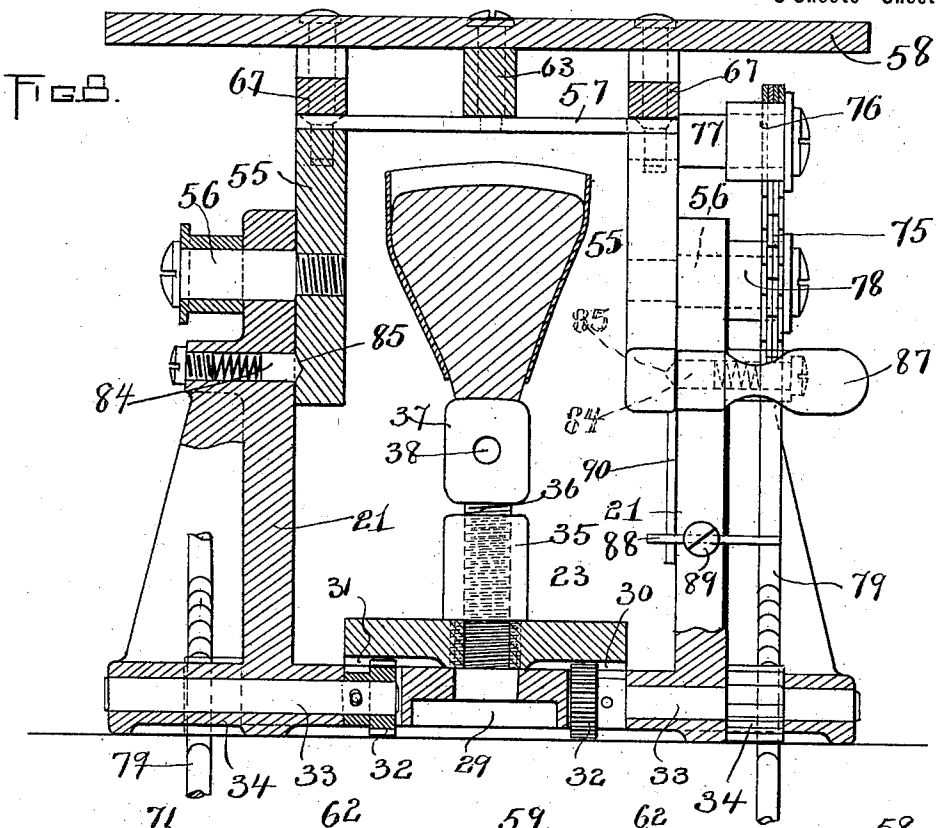
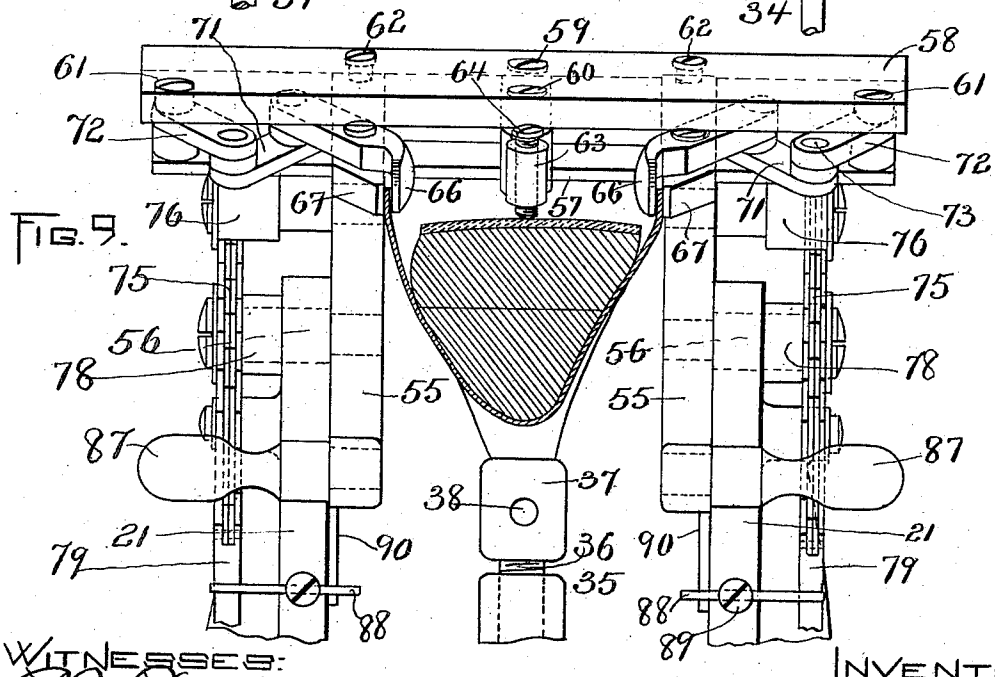


FIG. 9.



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No. 693,620. Patented Feb. 18, 1902.

A. F. PRESTON.

PULLING OVER MACHINE.

(Application filed Mar. 5, 1900.)

(No Model.) 5 Sheets—Sheet 5.

Fig 11.

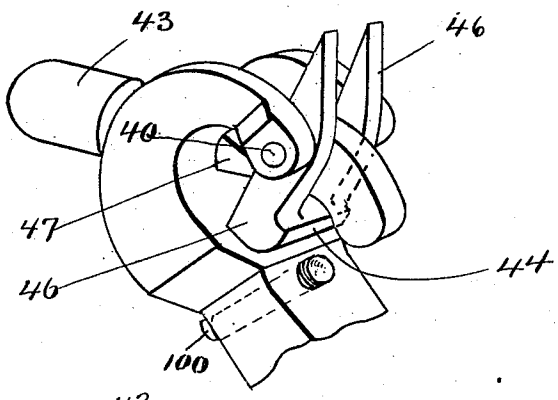
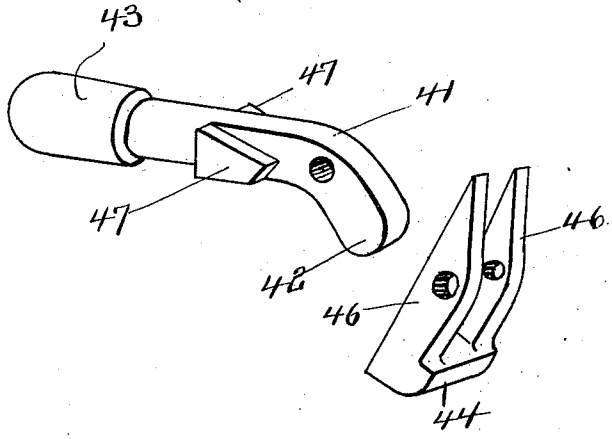


Fig 12.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT F. PRESTON, OF EAST BOSTON, MASSACHUSETTS.

PULLING-OVER MACHINE.

SPECIFICATION forming part of Letters Patent No. 693,620, dated February 18, 1902.

Application filed March 5, 1900. Serial No. 7,350. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. PRESTON, of East Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pulling-Over Machines, of which the following is a specification.

This invention has relation to machines for "pulling over" the upper of a boot or shoe on a last for the purpose of stretching the upper and removing the wrinkles therefrom.

The invention contemplates the employment of pincers arranged oppositely to each other and adapted to simultaneously grip and pull over the upper on both sides, with means for causing the pincers to grip the upper at successive points farther and farther from the end of the shoe where the operation is begun. The parts are so arranged that the pincers and shoe are moved relatively to each other in a line substantially parallel to the median line of the sole, provision being made for a certain amount of loose movement of the shoe, so that the strain is equalized on both sides of the shoe, whereby I experience no difficulty in pulling over the edges of the upper at the shank, the two edges of which are differently curved. This loose movement also permits the employment of the same machine for right and left shoes, as well as for shoes of various sizes and shapes. As illustrated upon the drawings, the shoe is moved longitudinally relatively to the pincers, the feeding being accomplished by foot-power and the extent of feed being determined by the will of the operator.

The invention also contemplates the employment of jaws for initially gripping the toe end of the upper, said jaws acting as a gage to determine the length of the tip and insuring that the latter is squared prior to the operation of pulling over, and it further contemplates the employment of a holddown to engage the sole when the jaws are grasping the toe end of the upper.

Another feature of the invention, which I regard as desirable, is that the pincers are moved in a plane substantially parallel to the plane of the sole and not in lines perpendicular to the said plane, and consequently there is little tendency to strip the insole from the last. The pincers automatically follow the face of the sole of the last as the shoe is fed to cause them to engage successive points on the side edges of the upper, said pincers being likewise formed so that their engagement with the edge of the upper is always assured.

By means of the machine which I have illustrated as embodying the invention I am able to pull over a much greater number of shoes in a given time than has been possible with machines as hitherto constructed or proposed, and at the same time I am able to accomplish much better results and to insure that the creases and the stretch are entirely taken out of the leather that constitutes the upper.

I have contemplated embodying the invention in numerous different forms and have illustrated upon the drawings and shall now proceed to describe the best embodiment of the invention now known to me; but I do not limit myself to the details of construction herein described, as the machine may be greatly varied and changed without departing from the spirit and scope of the invention.

Referring to the said drawings, to which I have previously referred, Figure 1 represents in plan view a pulling-over machine embodying my invention. Fig. 2 represents the same with the grippers or pincers in the positions assumed by them at the completion of their inward movement over the sole. Fig. 3 represents a front end elevation of the machine. Fig. 4 represents a longitudinal section through the same. Fig. 5 represents a side elevation of the machine with the gripper-carrying head in operative position. Fig. 6 represents a somewhat similar view with the head in operative position. Fig. 7 represents a section through the same. Fig. 8 represents a transverse section through the machine. Fig. 9 represents another section through the machine and illustrates the grippers or pincers as just grasping the edge of the upper. Fig. 10, Sheet 2, illustrates in detail the mechanism employed for causing the feeding operation. Figs. 11 and 12 illustrate the mechanism for grasping the toe end of the last.

As illustrated upon the drawings, the machine comprises a base 20, at the sides of which, at the rear end, project uprights or standards 21 21 to receive the pincer-carrying head. On the base rests a carrier 23, which

is adapted to slide longitudinally thereof between the standards 21. Said carrier is held loosely in place by a pin 24, projecting through a slot 27 in said carrier and through a slot 25 in the base. The pin is preferably less in diameter than the slot 27, so that the carrier is adapted to move laterally relatively thereto to a limited extent. On its upper end the pin is provided with a large head 28 and on its lower end with a block 26, adapted to slide in a groove 29 in the under side of the base. On its under side the carrier 23 is provided with two rows of rack-teeth 30 31, with which engage pinions 32 32 on the ends of shafts 33 33, journaled in the base. The pinions are provided with hubs through which pins are passed into slots in the shafts, the said slots being provided for the purpose of permitting a slight rotary motion to each of the pinions relatively to the shaft. This loose movement permits a loose movement of the carrier to accommodate the last to the pincers.

Rigidly secured on each of the shafts 33 is a ratchet 34, by means of which the shafts are given a step-by-step movement. The mechanism for rotating said ratchets will be subsequently described.

In the rear of the slide, midway between the standards 21, a sleeve 35 is secured in place by passing it into a threaded aperture in the said slide, said sleeve being internally threaded to receive a screw-bar 36, having a head 371, with apertures 381 to receive a tool by means of which it may be rotated. The said screw-bar serves as a support for the top of the last when the latter is turned upside down and placed in the machine. In the front end of the carrier is formed a groove 37 to receive the base of a post 38. A screw-bar 39 is passed through a threaded aperture in the base of the said post and at its end is rotatively secured in the carrier or slide 23, as shown in Fig. 4. By rotating said screw-bar the post 38 can be adjusted back and forth along the carrier. This post is curved forwardly and upwardly and is then bent downwardly and rearwardly at its upper end, being bifurcated at said end to receive a pin or stud 40. The holddown is fulcrumed on said stud, and it consists of a lever 41, having a curved end 42, adapted to engage the insole, and a handle 43. A gripper is likewise pivoted on said stud 40, and it consists of the jaw 44, adapted to coact with the stationary jaw 45, formed on the post 38, as shown in Fig. 4, said gripper having two arms 46 46, through which the stud 40 extends, said arms being extended or projected longitudinally for a purpose which I shall now describe. The lever 41 is provided with lateral projections 47 47, which are adapted to engage the said arms 46 when said lever is rocked in either direction. When the lever is swung to the left in Fig. 4, the projections 47 engage the forward part of the arms 46 and force the jaw 44 against the jaw 45, the faces of said jaws being eccentric of the stud 40. This grips the upper between the two jaws. When said handle 43 is swung to the right, however, the projections engage the extensions of the arms 46 and move the jaw 44 into an inoperative position to release the upper. Below the holddown the post 38 is provided with laterally-projecting bosses 48, and through said post and bosses is passed a stud or pin 49, on the projecting ends of which are fulcrumed two levers 50 50, connected at their outer end by a cross-bar 51. A roll 52 is journaled in the other end of the levers and is adapted to receive the end of the last, as shown in Fig. 4. A spring 53 is connected to the cross-bar 51 and to a stud 54 at the base of the post to hold the roll yieldingly upward toward the end of the holddown.

When the shoe is placed in the machine, it is turned upside down, as previously stated, and the top of the toe is rested on the roll. Then when the lever of the holddown is swung to the left in Fig. 4 the end of said lever engages the insole and forces the shoe down upon the roll and at the same time causes the gripper to engage the toe of the upper.

In order to limit the extent to which the end of the upper is inserted between the jaws of the gripper, I employ a gage consisting of a screw 100, which is threaded into the post and lies so as to have its end projecting up from the face of the stationary jaw far enough to be engaged by the upper. The movable jaw is slotted or grooved to escape the end of the screw. By this device the exposed length of the tip or upper upon the shoe is graduated.

The pincers are mounted upon a head which is adapted to oscillate about a horizontal axis transverse of the path of movement of the carrier. Said head consists of two side plates 55, fulcrumed on studs 56, passed through the standards 21. Said plates are connected by two cross-bars 57 57, placed in recesses in the tops of said plates, and above said cross-bars is a top plate 58, held in place by screw-pins 59 60 61 62, as shown. In addition to securing the cross-bar 57 and the top plate 58 together the screw-pins 59 and 60 secure in place a forwardly-projecting abutment 63, in the end of which is an adjusting-screw 64, rounded at its end to rest upon the insole. This abutment is located midway between the side plates 55. The forward cross-bar 57 is projected laterally beyond the side plates 55, and the top plate 58 projects laterally to the same extent.

The pincers each consist of two jaws 66 67, having downwardly-projecting lips 68. The jaw 67 consists of a long lever pivoted upon the stud 62, which is passed through the top plate into the top of the side plate, said stud being located at the rear edge of the top plate, and whereby the lever 67 is comparatively long, and its free end is adapted to swing transversely of the sole of the last, as shown in Fig. 1. The jaw 66 is fulcrumed near the free end of the lever 67 by a stud 70. This jaw is comparatively short, and its rear end is connected to the stud 61 by toggle-le-

vers 71 72, pivoted, respectively, to the rear end of said jaw 66 and the stud 61. On the stud 73, which connects the toggle-levers at their knuckle, is a washer 74, provided with laterally-projecting ears, to which is secured a chain or other flexible connection 75. Said chain passes rearwardly around the roll 76, journaled on the stud 77, projecting laterally from the side plate, and then in front of the roll 78, journaled on the stud 56. Said chain is then connected to a rack-bar 79, adapted to engage the ratchet 34.

I have described the pincer mechanism at one side of the machine; but it will be understood that that at the other side is similar thereto, and I have placed upon the drawings the same reference-numerals which I have used to denote the various parts which correspond to those I have just described.

The rack-bars at their lower ends are connected by suitable connections with a treadle mechanism, (not shown,) so that by depressing the treadle and drawing upon the chain the jaws of the pincers will be first closed and then swung inward toward the median line of the sole around the fulcrums 69.

The movement of the pincers is simultaneous, both being connected to and operated by the said treadle mechanism. To return the pincers to inoperative position, the toggle-levers 71 72 are provided with studs 80 81, connected by a spring 82. When the machine is not in use, the swinging head which carries the pincers is held upright by spring-pressed pins 84, arranged in the standards 21 and entering sockets 85 in the side plates, as shown in Fig. 8; but when the machine is in operation the head is swung forward and rests with considerable pressure against the insole, as previously described, and for the purpose of swinging the head forward the side plates are forwardly extended at their lower ends and provided with laterally-extending handles 87.

The rack-bars 79 pass downward through apertures in the base-plate and are in engagement with the ratchets, except when held out by the mechanism which I shall describe.

Mounted loosely in horizontal slots in the standards 21 are two dogs 88, each of which projects laterally in both directions beyond the sides of the standards. Said dogs are held in place by screw-pins 89, which extend into sockets therein, and they serve as fulcrums around which the dogs may swing. To the side plates are secured two downwardly-projecting fingers 90, which when the pincer-carrying head is horizontally bearing against the inward ends of said dogs cause the outer ends of the same to force the rack-bars away from the ratchets; but when said head is tilted forward said fingers are moved out of engagement with said dogs, and the downward pull or weight of the treadle on the rack-bars brings them into engagement with the ratchets. The position of the roll 78 on the stud is such that when the chain is drawn taut the teeth of the rack will engage the teeth of the ratchet.

The operation of the machine is as follows: The insole is first tacked upon the sole of a last, and the upper is then placed upon the last. The last is turned upside down, and the projecting toe end of the upper is inserted between the gripper-jaws on the post against the gage-screw to "square" the end relatively to the last. Then the holddown is forced into position, this causing the gripper to firmly engage the upper and draw the same taut longitudinally of the last. The tilting head is then swung forward until the screw 64 rests upon the insole. The carrier this time has been moved rearward to its fullest extent. As the head is swung downwardly the edges of the upper along the sides are inserted between the lips 68 68 of the pincer-jaws. Then the treadle is depressed. This causes the pincers to grip the upper at points opposite each other and to draw the edges of the upper at points opposite each other and to draw the edges of the upper transversely of the sole, toward the median line thereof. When the upper has been stretched to the greatest possible extent, tacks are inserted by any suitable tacking mechanism to prevent the upper from contracting. Then when the foot is raised from the treadle the springs 82 swing the pincers back and lift the chains, and the rack-bars are raised to rotate the ratchet and advance the carrier relatively to the pincers. As the carrier advances the edges of the upper slide through the jaws of the pincers, but are not disengaged entirely therefrom, so that the next time the treadle mechanism is depressed the pincers engage the upper at the edges a slight distance from where they were previously engaged and draw the upper across the sole, as described. This operation is continued until the shoe is fed its entire length under the head, the upper being gripped at successive points and being drawn taut across the sole. It is not essential, although desirable, that the upper should be tacked in place each time it is drawn across the sole. When the pincers engage the upper along the shank, the carrier moves laterally to one side or the other to equalize the strain upon the upper, this being permitted by the pin which passes loosely through the slot 27, and it will be seen that the rack-teeth 31 on the under side of the carrier are elongated to permit considerable lateral movement of the carrier. Consequently the edges of the upper are drawn over the sole practically to the same extent on either side thereof, regardless of the curvature on the edge of the sole, this being accomplished automatically as the work progresses. After the sides of the upper have been stretched and tacked the shoe is subsequently placed in a machine for wiping over the ends of the upper at the toe and heel.

To one familiar with the art of pulling over shoes it will be apparent that the present invention which I have just described possesses

many features of advantage. In the first place, but two pairs of oppositely-arranged pincers are provided for drawing the upper taut over the last instead of a number of pairs, which complicate the machine and make it hard to use. Again, the pincers are not arranged to pull first in lines perpendicular to the plane of the sole, then across the sole; but, on the contrary, their only movement is transversely of the sole, and naturally there is little tendency toward stripping the insole from the sole of the last.

The strain on the two sides of the upper is automatically equalized without any manual effort on the part of the operator, and consequently the leather of the upper is well stretched to remove wrinkles or creases and is placed accurately upon the last. By reason of the head resting loosely upon the insole it follows the curvature of the sole automatically, and consequently there is little tendency of the upper being disengaged from the jaws, and all that is necessary for the operator to do when using the machine is to guide the carrier as it is moved forward and to operate the treadle mechanism. It is possible for the operator to obtain a strain diagonally of the sole by twisting the carrier or swinging the front end to one side or the other.

It is evident that many changes may be made in the machine, as I have previously stated, without departing from the spirit and scope of the invention.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without having attempted to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A machine of the character described comprising oppositely-arranged pincers, mechanism for operating said pincers simultaneously, and mechanism for causing said pincers to pull successive portions of the edge of the upper over the sole, in lines either at right angles or oblique to the median line of the said shoe, as desired.

2. A machine of the character described comprising two pincers arranged to grip both edges of the upper at opposite points, means for operating said pincers, and mechanism for causing said pincers to pull over the two edges of the upper successively at points farther and farther removed from the end of the partially-formed shoe, said mechanism including a shoe-support movable in a line transverse to the lines of pull of the pincers, and also adapted to swing about an upright axis.

3. A machine of the character described comprising oppositely arranged and acting pincers, a support for the partially-formed shoe, provisions whereby said shoe may be positioned with its median line either perpendicular or oblique to the lines of pull of the pincers, and means whereby the said support and pincers are moved longitudially of the shoe relatively to each other, after each operation of the pincers.

4. A machine of the character described comprising oppositely arranged and acting pincers for grasping opposite edges of the upper, a support for the partially-formed shoe, movable longitudinally and transversely of the median line of the shoe-sole in a plane substantially parallel to that of the sole, and means for moving the support between the pincers, whereby said pincers may be caused to grasp and pull over the upper at successive points farther and farther removed from the end of the shoe.

5. A machine of the character described comprising two pincers arranged to grip the opposite side edges of the upper, and means for causing said pincers to pull over successive portions of said edges, and provisions including a yielding support for the last movable with respect to the pincers for equalizing the strain on the said edges.

6. A machine of the character described comprising pincers arranged to grip the opposite side edges of the upper, and means for causing said pincers to pull over successive portions of said edges, and provisions including a yielding shoe-support movable with respect to said pincers for pulling the said opposite edges of the upper to the same extent over the side edges of the sole irrespective of the contour of said sole.

7. A machine of the character described comprising pincers for simultaneously grasping the opposite side edges of the upper to pull over successive portions of said side edges farther and farther removed from the end of the last, means for actuating said pincers and provisions whereby the jaws of the pincers are movable in lines perpendicular to the sole to follow the face of the said sole.

8. A machine of the character described comprising pincers for simultaneously grasping the opposite side edges of the upper, provisions whereby the pincers and the partially-formed shoe are movable longitudinally of said shoe relatively to each other, and mechanism for actuating said pincers, said mechanism having means for permitting the pincers to yield in lines perpendicular to the sole and thereby maintaining the jaws of the pincers at a certain distance from the face of the sole.

9. A machine of the character described comprising oppositely-arranged pivoted pincers for grasping the opposite edges of the upper, said pincers lying substantially parallel to the plane of the sole and longitudinally of the median line of the sole, and means for closing and moving the jaws of said pincers toward the median line of the sole of the shoe, whereby the pincers when operated move in a plane substantially parallel to the sole of the shoe.

10. A machine of the character referred to comprising a pincer for grasping the edge of an upper, arranged parallel to the plane of

the sole, said pincer having one of its jaws extended longitudinally of the median line of the sole and pivoted at its end on a relatively stationary fulcrum, and means connected to the other jaw for closing said jaws and swinging said pincer bodily about said fulcrum in a plane parallel to the plane of the sole.

11. A machine of the character described comprising a support, a pincer arranged longitudinally of the sole and substantially parallel to the plane of the said sole, said pincer having one jaw rearwardly extended and fulcrumed on said support, and a toggle connected to the rear end of the other jaw and to a stationary pivot, said toggle being thereby adapted to close said jaws and swing said pincer bodily about the fulcrum for the elongated jaw transversely of the sole.

12. A machine of the character described comprising a support for the partially-formed shoe, pincers for engaging opposite portions of the edges of the upper, and a tilting head for supporting said pincers, said tilting head being maintained in position by the sole of the shoe on the support.

13. A machine of the character described comprising a support for the partially-formed shoe, pincers for engaging opposite portions of the edges of the upper, a movable head for supporting said pincers and adapted to rest upon the sole of the shoe, to follow the face thereof and means for moving said head and shoe-support one relatively to the other, in lines longitudinal of the shoe.

14. A machine of the character described comprising a support for the partially-formed shoe, pincers for engaging opposite portions of the edges of the upper, a tilting head for supporting said pincers, and means for advancing said shoe-support under said head whereby said pincers may be caused to grasp successive portions of the said edges of the upper, farther and farther removed from the end of the shoe.

15. A machine of the character described comprising a support for the partially-formed shoe, pincers for engaging opposite portions of the edges of the upper, a head for supporting said pincers, and mechanism for alternately operating said pincers and feeding the shoe relatively to the pincers.

16. A machine of the character described comprising a support for the partially-formed shoe, pincers for engaging opposite portions of the edges of the upper, means for actuating said pincers to draw the edges of the upper toward each other, said shoe-support being moved in lines longitudinal of the shoe relatively to the pincers, and being capable of a rotative movement relatively to said pincers, whereby said pincers may operate in lines oblique to the median line of the sole.

17. A machine of the character described comprising a base, a head on said base, oppositely-arranged pincers pivoted on said head, a shoe-support mounted to slide on said base to cause the pincers to engage successive portions of the edges of the upper, and means for alternately actuating the pincers and the shoe-support.

18. A machine of the character described comprising a base, a shoe-support movable along said base, a head movably mounted on said base and arranged above said shoe-support whereby it may rest upon the shoe, pincers mounted on said head and having their jaws movable toward the median line of the shoe on the support, and means for alternately operating said pincers and feeding said shoe-support.

19. A machine of the character described comprising a base, a head, oppositely-arranged pincers on said head adapted to grip opposite edges of the upper, and a shoe-support adapted to yield to the action of the pincers.

20. A machine of the character described, comprising a base, a head, oppositely-arranged pincers on said head adapted to grip opposite edges of the upper, and a shoe-support on which a shoe may be loosely supported, said support being adapted to permit the shoe to yield in the line of least resistance when the pincers are operated.

21. A machine of the character described comprising a base, a support on which the partially-finished shoe may loosely rest to yield to the action of the pincers, pincers, a head for said pincers, and provisions whereby said head holds the shoe on the said support, said head and said support being movable one with respect to the other in lines longitudinal of the shoe.

22. A machine of the character described comprising a shoe-support, means for gripping the upper at the end of the shoe to square the toe-cap on the last, two oppositely-arranged pincers, and means for causing said pincers to pull over the opposite edges of the upper at points farther and farther removed from the gripping means.

23. A machine of the character described comprising pulling-over devices, means for steadying the end of the shoe, and means on a portion of which the pulling-over devices are mounted for steadying the body of the shoe.

24. A machine of the character described comprising oppositely-arranged pincers, a head for supporting said pincers, a slide carrying a shoe-support, and a post on said slide carrying a gripper for the end of the shoe-upper.

25. A machine of the character described comprising two oppositely-acting pincers, adapted to pull over successive portions of the side edges of the upper, and means for squaring the end of the upper, said means and said pincers being movable one with respect to the other in lines longitudinal of the shoe.

26. A machine for lasting boots and shoes having a non-yielding gripper for grasping the end of the upper during the lasting oper-

ation, a holddown which operates the gripper, and a pintle on which said gripper and holddown are both fulcrumed.

27. A machine for the manufacture of boots and shoes having a standard, a yielding support for the toe end of the shoe, a holddown pivoted on said standard for forcing the shoe against said support, and a jaw operated by the holddown and coacting with the standard for positively grasping the upper to prevent it from yielding.

28. A machine for lasting boots and shoes having a yielding support for the toe end of the shoe and non-yielding mechanism for permanently gripping the toe end of the upper during the lasting operation and forcing the shoe against said yielding support to stretch the upper longitudinally.

29. A machine for the manufacture of boots and shoes having a non-yielding gripper for the end of the upper, a non-yielding holddown movable with respect to said gripper, and means whereby one of said elements is operated positively by the other.

30. A machine for the manufacture of boots and shoes having a gripper for the end of the upper, a holddown movable with respect to said gripper, and projections on said holddown for operating said gripper.

31. A pulling-over machine comprising the following instrumentalities, to wit: oppositely-disposed pincers adapted to engage and stretch the upper of a partially-formed shoe; a support for said pincers; a support for the last on which the said shoe is placed; one of said supports being movable with respect to the other and being likewise movable about a center of motion; and means for actuating said pincers; said instrumentalities being combined, whereby after each actuation of the pincers to stretch the upper, the last-support may be moved to cause the pincers to engage the upper at other points, and said last may be positioned obliquely with respect to the line of pull of the pincers.

32. A pulling-over machine comprising the following instrumentalities, to wit: oppositely-disposed pincers adapted to engage and stretch the upper of a partially-formed shoe; a support for said pincers; a support for the last on which the said shoe is placed; one of said supports being movable with respect to the other; means for actuating said pincers; said instrumentalities being combined, whereby after each actuation of the pincers to stretch the upper, the last-support may be moved to cause the pincers to engage the upper at other points; and means whereby the operative portions of the pincers rise and fall to follow the curved face of the sole, as one support is moved relatively to the other.

33. A pulling-over machine comprising a support, oppositely-disposed pincers on said support adapted to stretch the upper of a partially-formed shoe upon a last, and a slide on said support carrying a support for the last and partially-formed shoe, said slide being movable with respect to said stretching-pincers whereby after each actuation of the stretching-pincers, the last and partially-formed shoe may be moved to cause said pincers to engage the upper at other points farther from the end of the shoe, said slide being likewise movable to position the shoe obliquely with respect to the line of pull of the pincers.

34. A pulling-over machine comprising the following instrumentalities, to wit: oppositely-disposed pincers adapted to engage and stretch the upper of a partially-formed shoe; a support for said pincers; a support for the last on which the said shoe is placed, said support being provided with a standard to engage the last, and with a gripper to engage the upper at the toe end of the shoe, one of said supports being movable with respect to the other; and means for actuating said pincers.

35. A pulling-over machine comprising a base, a vertically-movable head on said base, pincers on said head whereby they are able to follow the curved face of a sole, and a slide movable relatively to said head and having means for receiving a last thereon.

36. A pulling-over machine having a pair of oppositely-disposed pincers, means for operating said pincers, a support for said pincers, and a second support having gripping means for gripping and squaring the toe-cap at the end of the upper, one of said supports being movable with respect to the other.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT F. PRESTON.

Witnesses:
M. B. MAY,
C. C. STECHER.